



Process for the preparation of .alpha.-methylene-.gamma.-butyrolactone and .alpha.-acetoxymethyl-.gamma.-butyrolactone

Description of Technology: This invention is in the field of synthetic organic chemistry. This invention pertains to simple, efficient and economic methods to produce .alpha.-methylene-.gamma.-butyrolactone from tetrahydro-3-furoic acid and .alpha.-acetoxymethyl-.gamma.-butyrolactone.

Patent Listing:

1. **US Patent No. 6,362,346**, Issued March 26, 2002, "Process for the preparation of .alpha.-methylene-.gamma.-butyrolactone and .alpha.-acetoxymethyl-.gamma.-butyrolactone"

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Market Potential: .alpha.-Methylenelactones have been the subject of intensive synthetic studies. Specifically, the .alpha.-methylene-.gamma.-butyrolactone group is an important structural feature of many sesquiterpenes of biological importance. In addition, .alpha.-methylene-.gamma.-butyrolactone, or its hydrogenated product, 3-methyltetra-hydrofuran, are regarded as a potential key monomers in both homopolymers and copolymers. Currently the cost of .alpha.-methylene-.gamma.-butyrolactone is too high to warrant commercial production of its resulting polymers. Some of the current synthetic routes suffer from low yields, byproducts and expensive starting materials. In the instant invention, high yields of .alpha.-methylene-.gamma.-butyrolactone are obtained by an acid-catalyzed rearrangement of tetrahydro-3-furoic acid or base-catalyzed reaction of .alpha.-acetoxymethyl-.gamma.-butyrolactone.

Although previous methods for the production of .alpha.-methylene-.gamma.-butyrolactone are useful, they are time consuming and are multipart processes. Therefore, the problem to be solved is to find a simple and efficient method to produce .alpha.-methylene-.gamma.-butyrolactone. The present methods represent an advance in the art by offering processes that are a single or double step with high yields and good selectivity.

Benefits:

- Simpler and more efficient method for producing .alpha.-methylene-.gamma.-butyrolactone
- Single or double step processes with high yields and good selectivity

Applications:

- Sesquiterpenes

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